
ENVIRONMENTAL PRODUCT DECLARATION



ECHOPANEL® & MURA™

wovenimage.com

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WOVEN IMAGE®



In accordance with ISO 14025 and EN 15804 for:
EchoPanel® and Mura™

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COMPANY PROFILE



EchoPanel® **LONGITUDE** in colourway #330

Woven Image was established in 1987 after identifying a strong need for design driven interior finishes.

Based in Australia, they fast became a leading international business to business supplier of high-performance acoustic finishes and textiles for a wide range of commercial interiors across workspace, hospitality and education sectors. Woven Image has offices in Australia and Asia, and a large network of distribution partners across Europe, North America, the Middle East and beyond.

Environmentally-sensitive products and sustainability are at the core of the company and, because of Woven Image's commitment, they became **pioneers in producing high-performance acoustic finishes, wallcovering and textiles using recycled materials.**

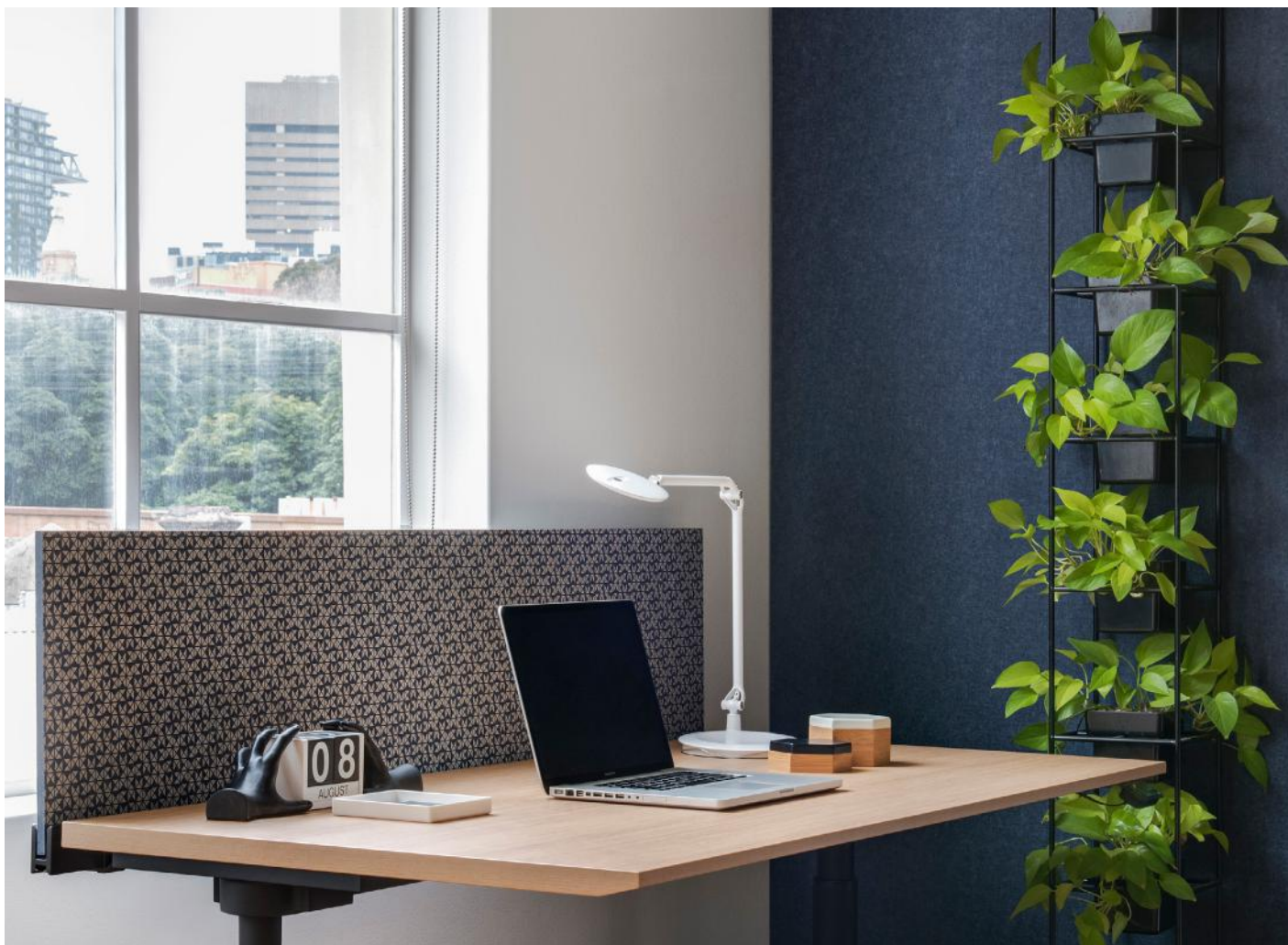
Today almost all Woven Image products have gained environmental accreditations from third-party organisations.

WHAT IS AN EPD?

EPDs allow manufacturers to report quantified environmental performance information for their products. EPDs are internationally accepted and developed in-line with well-established International Standards to ensure rigour and transparency.



GREEN STAR, LEED & BREEAM COMPLIANCE



EchoPanel® TRIO & EchoPanel® 12mm in colourway #365

Because this EPD is EN15804-compliant and third-party reviewed, it is recognised by sustainability rating schemes across the globe.

- **Green Star (Australia):** EPDs can help obtain up to 19/100 points under the Sustainable Products credit of Green Star Interiors v1.2 and 3/100 in Design and As Built v1.2. This EPD can also be used in the LCA credit (up to 7/100 points) and the embodied carbon innovation credit (up to 3 points).
- **LEED (US):** EPDs are rewarded in up to 2/110 points under the Materials and Resources credit category of LEED v4. LEED. The EPD results can be used in the LCA Building Life-Cycle Impact Reduction.
- **Green Globes (US and Canada):** Under the Green Globe scheme, up to 10 points are available for fit-out and interior cladding products with EPDs.
- **BREEAM (UK):** EPDs can be used to increase the contribution of building elements to the score of the life-cycle Impact and the Insulation credits under the Materials section (12.5% of the score).
- **EPDs can be used** in green building schemes across the world, such as Lotus Interiors (Vietnam) and HQE (UK, Europe, Asia, North America and Middle East).

ENVIRONMENTAL PRODUCT DECLARATION

SUSTAINABILITY



Woven Image has pro-actively sought to improve its own performance wherever possible and practical.

In particular, we have established a set of guiding environmental principles that provide a framework for the environmental management of our processes, products and services.

Our guiding environmental principles are life-cycle oriented, dynamic and seek to embody the most current thinking and actions on achieving sustainable products and services within the context of what Woven Image (and its suppliers) can realistically control.

OUR GUIDING PRINCIPLES INCLUDE:

- Responsible resource use, including attention to biodiversity protection and other source related raw materials factors.
- Adopting a Product Stewardship approach and applying the waste minimisation hierarchy (avoid, reduce, reuse, recycle) as a tool to maximise resource use efficiency, use of post consumer recycled content and options for fundamental dematerialisation through waste avoidance and the shift to product-service solutions.
- Elimination or significant reduction in the use of hazardous substances and toxic materials.
- Elimination or significant reduction of emissions to air and water where possible.

- Minimising overall energy consumption while maximising energy efficiency and the potential for renewable and related 'green power' options.
- Minimising overall water consumption while maximising water efficiency, conservation and the potential for water reuse and recycling.
- Sourcing materials, products and services from suppliers with independently certified environmental management systems or similar.
- Providing designers, specifiers and customers with informative and educational information about the environmental performance of Woven Image products and services.
- Ongoing research and development to ensure Woven Image products and services represent leading edge environmental thinking, concepts, tools and performance. This includes relevant data collection, monitoring and reporting to facilitate overall environmental improvements.

The sustainable application of materials, products and services is a key priority at Woven Image. This means taking greater responsibility for Woven Image products both upstream and downstream of our core business activities.

At a strategic level, Woven Image seeks to operate in a responsible and innovative way that exemplifies resource efficiency by using materials smartly and sensitively. Woven Image's sustainable procurement.



EchoPanel® 12mm **TANDEM** pendants in colourway #551 & EchoPanel® **TRIO** in colourway #315

practices seek to improve the environmental and social impacts of our operations by engaging with the whole life-cycle of textile products and services; selecting suppliers and/or products that have the minimal impacts for a particular class of product or service (including: manufacturers, distributors, equipment consultants and contractors). We not only strive to create low impact products, we are also developing systems and services to ensure our products do not contribute to future environmental problems when they are discarded or become obsolete. This includes ongoing attention to product life-cycle management and Product Stewardship specifically. Woven Image believes that all manufacturers and suppliers should take greater responsibility for their products and services beyond the point of sale and warranty.

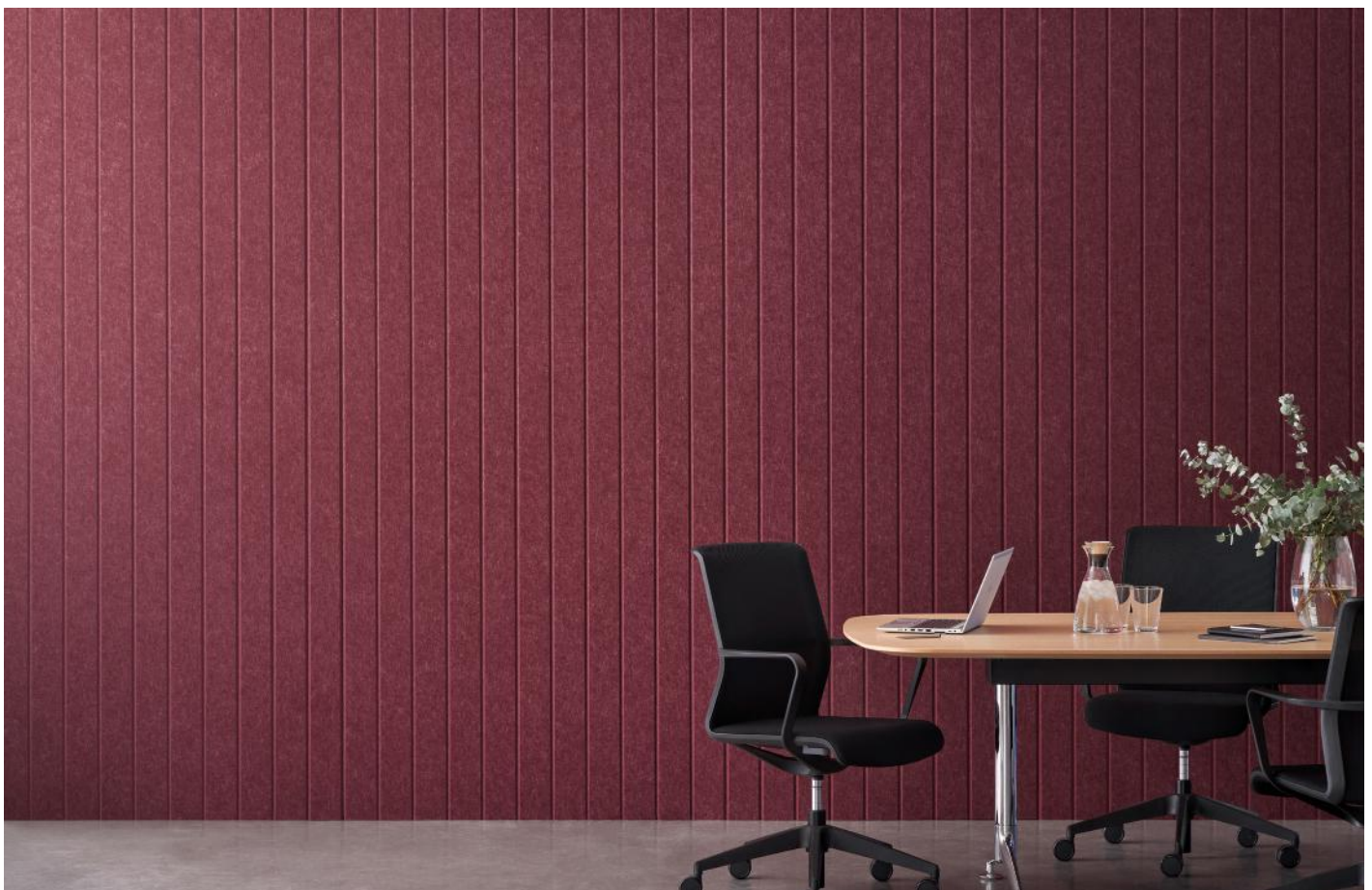
Environmentally sound Product Stewardship activities at Woven Image acknowledge and act on the need to eliminate and/or minimise environmental impacts at all stages of the product life-cycle.

The process of working with customers and other relevant stakeholders on end-of-life requirements provides Woven Image with an unmatched opportunity to develop practical Product Stewardship measures that maximise environmental performance in a commercially viable manner.

Consistent with the waste management hierarchy, an essential element in our Product Stewardship approach seeks to maximise resource use efficiency including the use of post-consumer recycled content in new product as well as working towards significant levels of recovery, potential reuse and/or recycling of end-of-life Woven Image product. Woven Image will strive to retain responsibility for Woven Image products wherever practical and within our scope of business activity.

Woven Image's Environmental Management System has allowed us to reduce the significant environmental impacts of our administrative centre, warehouse and production facility and with the assistance of Greenfleet we have been able to offset what remains. Greenfleet is a not-for-profit organisation dedicated to connecting people with real climate action. They are Australia and New Zealand's most respected source of biodiverse carbon offsets (Greenfleet, 2018). For the 2019/20 financial year we were able to offset 186.1 tonnes CO₂-e using Greenfleet's programme.

Additionally, sustainability is at the core of the EchoPanel® and Mura™ brand ethos in the form of their commitment to recycling, upcycling, dematerialisation and a true cradle-to-cradle environmental approach.



EchoPanel® **LONGITUDE** in colourway #269

RECYCLING & UPCYCLING

EchoPanel® and Mura™ products are made from up to 60% post-consumer waste sourced from recycled PET bottles.

During the financial year 2019/20, the production of EchoPanel® and Mura™ products resulted in 608 tonnes of PET being diverted from landfill, which equates to over 30.4 million 600ml bottles. The total PET diverted from landfill since the product went to market in 2004 is over 4839 tonnes, which is over 242 million bottles.

Furthermore, the PET is converted into EchoPanel® and Mura™ which boast a 10-year minimum life expectancy, after which the material is still 100% recyclable and reusable.

DESIGNED FOR DEMATERIALISATION

EchoPanel® is frequently used in workstations. Previously, these were typically made of MDF board with foam-backed fabric or other materials applied to the front and back. These additional materials were required to improve acoustic performance, make them pin-able and deliver against the overall design direction.

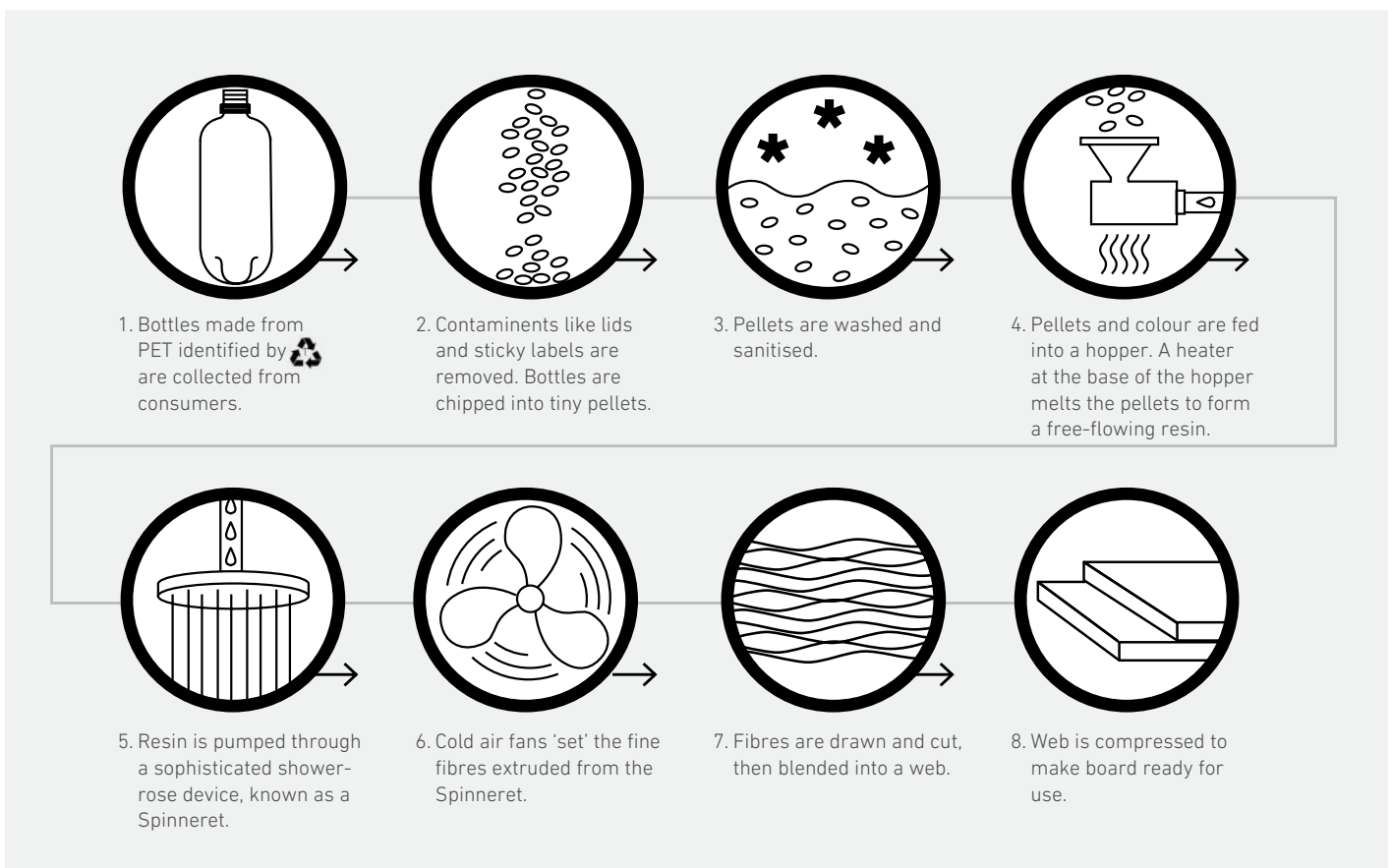
These challenges were similar with wall panelling applications. However, the characteristic of EchoPanel®; being lightweight, double-sided, pinable, and a fully finished material with superior sound absorption qualities, means that its use offers the significant environmental, and cost saving, benefits of dematerialisation.

CRADLE-TO-CRADLE THINKING

At the start of their life-cycle, EchoPanel® and Mura™ use post-consumer PET waste, helping to reduce the generation of waste and energy necessary to produce it in comparison to virgin PET.

At the end of its life-cycle, a workstation using EchoPanel®, for example, is easy to dismantle and separate into the relevant recycling streams when compared to fabric-covered substrates, which are often contaminated with adhesives and fasteners.

Figure 1: Manufacturing process of EchoPanel® and Mura™



ENVIRONMENTAL PRODUCT DECLARATION

OUR KEY PRODUCTS



PRODUCTS & APPLICATIONS

EchoPanel® and Mura™ are landmark brands from Woven Image which have been designed to deliver against environmental, aesthetic and acoustic criteria to improve the overall look, feel and comfort of a commercial interior space.

EchoPanel® can be used as a panel or tile applied directly to the wall, as a room or space divider, in workstations, as a ceiling baffle or a variety of other applications where both good design and acoustic performance are required.

Mura™ is an innovative, cost effective and easy to install wallcovering. The face side has been designed to create a smooth, clean designer look whilst the back has been engineered with a forgiving texture that can be adhered to a variety of surfaces.

Both the EchoPanel® and Mura™ range come in a wide colour palette as well as a variety of printed designs. EchoPanel® and Mura™ are printed with environmentally preferable pigment inks that have been specially tailored to deliver excellent light fastness while remaining low-VOC, non-flammable and non-toxic. Mura™ can also be embossed to create a subtle textured result perfect for contemporary interiors.

CERTIFICATIONS

EchoPanel® and Mura™ both hold first-class performance ratings to ensure their suitability for high traffic commercial applications. These include a Group 1 rating in the ISO 9705 full-scale room fire test and a Noise reduction Coefficient (NRC) rate of up to 0.85 (with a 50mm air gap) for EchoPanel® in 24mm thickness, demonstrating its sound absorbing qualities.

EchoPanel® and Mura™ products achieve Global GreenTag™ GreenRate level A certification, and Product Health Declaration™: Platinum Health, for plain colours. This attracts the maximum multiplier in the sustainable products credits under GBCA's Green Star rating tool.

ACOUSTIC BENEFITS

The importance of good acoustics in an interior space are widely recognised to impact comfort in a bar or restaurant, for example, overall employee productivity in an office environment. It is therefore essential to address acoustic performance at the initial design stage.

The EchoPanel® and Mura™ family of products are optimised for acoustic performance, thanks to their substantiated Noise Reduction Coefficient (NRC) ratings. Furthermore, their high-end, fully finished, fabric-like appearance means that they deliver on function and design without the need for any additional extras.

VOCS

EchoPanel® and Mura™ are low VOC products. Both ranges have been tested to ASTM D5116 and CDPH Standard Method v1.2 with significantly low VOC emission rates results of <0.02mg/m²/hr, which are well below the Green Building Council of Australia Green Star Interiors V1.1 – 12.1.2B and Green Star Design & As Built V1.1 – 13.1.2B emission rate limit of <0.5mg m² hr. TVOC emissions rate of 0.054mg/m³ and Formaldehyde emissions rate of 2µg/m³ which are well below the LEED, WELL™ and BREEAM emissions limit requirements.



EchoPanel® **ADAPT SOCIAL** screen in colourway #442 with charcoal joiners

ECHOPANEL®

PRODUCT SPECIFICATIONS



PRODUCT SPECIFICATIONS

Table 1: EchoPanel® products included in this EPD

Design	Colour Code	Thickness (mm)	Length (mm)	Width (mm)	Area (m²)	Weight (kg)	Density (g/m²)
Plain	101	12	2800	1200	3.36	8.06	2400
	101	24	2400	1820	4.37	13.1	3000
	108	12	2800	1200	3.36	8.06	2400
	124	12	2800	1200	3.36	8.06	2400
	167	12	2800	1200	3.36	8.06	2400
	193	12	2800	1200	3.36	8.06	2400
	269	12	2800	1200	3.63	8.06	2400
	269	24	2400	1820	4.37	13.1	3000
	274	12	2800	1200	3.36	8.06	2400
	276	12	2800	1200	3.36	8.06	2400
	295	12	2800	1200	3.36	8.06	2400
	325	12	2800	1200	3.36	8.06	2400
	325	24	2400	1820	4.37	13.1	3000
	330	12	2800	1200	3.36	8.06	2400
	330	24	2400	1820	4.37	13.1	3000
	338	12	2800	1200	3.36	8.06	2400
	349	12	2800	1200	3.36	8.06	2400
	365	12	2800	1200	3.36	8.06	2400
	365	24	2400	1820	4.37	13.1	3000
	381	12	2800	1200	3.36	8.06	2400
	384	12	2800	1200	3.36	8.06	2400
	384	24	2400	1820	4.37	13.1	3000
	402	12	2800	1200	3.36	8.06	2400
	402	24	2400	1820	4.37	13.1	3000
	442	7	2800	1200	3.36	4.7	1400
	442	12	2800	1200	3.36	8.06	2400
	442	24	2400	1820	4.37	13.1	3000
	447	12	2800	1200	3.36	8.06	2400
	444	7	2800	1200	3.36	4.7	1400
	444	12	2800	1200	3.36	8.06	2400
	454	12	2800	1200	3.36	8.06	2400
	454	24	2400	1820	4.37	13.1	3000
	468	12	2800	1200	3.36	8.06	2400
	468	24	2400	1820	4.37	13.1	3000

PRODUCT SPECIFICATIONS

Table 1: EchoPanel® products included in this EPD

Design	Colour Code	Thickness (mm)	Length (mm)	Width (mm)	Area (m²)	Weight (kg)	Density (g/m²)
Plain (continued)	487	12	2800	1200	3.36	8.06	2400
	487	24	2400	1820	4.37	13.1	3000
	500	7	2800	1200	3.36	4.7	1400
	500	12	2800	1200	3.36	8.06	2400
	500	24	2400	1820	4.37	13.1	3000
	542	7	2800	1200	3.36	4.7	1400
	542	12	2800	1200	3.36	8.06	2400
	542	24	2400	1820	4.37	13.1	3000
	550	12	2800	1200	3.36	8.06	2400
	550	24	2400	1820	4.37	13.1	3000
	551	12	2800	1200	3.36	8.06	2400
	576	12	2800	1200	3.36	8.06	2400
	579	12	2800	1200	3.36	8.06	2400
	580	12	2800	1200	3.36	8.06	2400
	633	12	2800	1200	3.36	8.06	2400
	633	24	2400	1820	4.37	13.1	3000
	660	12	2800	1200	3.36	8.06	2400
	908	7	2800	1200	3.36	4.7	1400
	908	12	2800	1200	3.36	8.06	2400
	908	24	2400	1820	4.37	13.1	3000
Astro	270	12	2800	1200	3.36	8.06	2400
	462	12	2800	1200	3.36	8.06	2400
	489	12	2800	1200	3.36	8.06	2400
	548	12	2800	1200	3.36	8.06	2400
	907	12	2800	1200	3.36	8.06	2400
Frequency	100	12	2800	1200	3.36	8.06	2400
	101	7	2800	1200	3.36	4.7	1400
	101	12	2800	1200	3.36	8.06	2400
	213	12	2800	1200	3.36	8.06	2400
	301	12	2800	1200	3.36	8.06	2400
	544	7	2800	1200	3.36	4.7	1400
	544	12	2800	1200	3.36	8.06	2400
	577	12	2800	1200	3.36	8.06	2400

PRODUCT SPECIFICATIONS

Table 1: EchoPanel[®] products included in this EPD

Design	Colour Code	Thickness (mm)	Length (mm)	Width (mm)	Area (m ²)	Weight (kg)	Density (g/m ²)
Frequency (continued)	612	12	2800	1200	3.36	8.06	2400
	641	7	2800	1200	3.36	4.7	1400
	641	12	2800	1200	3.36	8.06	2400
Hex	11A1	12	2800	1200	3.36	8.06	2400
	444	12	2800	1200	3.36	8.06	2400
	542	12	2800	1200	3.36	8.06	2400
Tilt	131	12	2800	1200	3.36	8.06	2400
	402	12	2800	1200	3.36	8.06	2400
	501	12	2800	1200	3.36	8.06	2400
	545	12	2800	1200	3.36	8.06	2400
Trapeze	107	12	2800	1200	3.36	8.06	2400
	150	12	2800	1200	3.36	8.06	2400
	443	12	2800	1200	3.36	8.06	2400
	454	12	2800	1200	3.36	8.06	2400
Trio	100	12	2800	1200	3.36	8.06	2400
	315	12	2800	1200	3.36	8.06	2400
	365	12	2800	1200	3.36	8.06	2400
	381	12	2800	1200	3.36	8.06	2400
	500	12	2800	1200	3.36	8.06	2400

EchoPanel[®] **ASTRO** in colourway #270

PRODUCT SPECIFICATIONS



PRODUCT SPECIFICATIONS

Table 2: Mura™ products included in this EPD

Design	Colour Code	Thickness (mm)	Length (mm)	Width (mm)	Area (m²)	Weight (kg)	Density (g/m²)
Plain	101	1.9	6000	1210	7.26	2.54	350
	101	1.9	25000	1210	30.25	10.59	350
	101	1.9	105000	1210	127.05	44.48	350
	124	1.9	6000	1210	7.26	2.54	350
	124	1.9	25000	1210	30.25	10.59	350
	124	1.9	105000	1210	127.05	44.48	350
	167	1.9	6000	1210	7.26	2.54	350
	167	1.9	25000	1210	30.25	10.59	350
	167	1.9	105000	1210	127.05	44.48	350
	269	1.9	6000	1210	7.26	2.54	350
	269	1.9	25000	1210	30.25	10.59	350
	269	1.9	105000	1210	127.05	44.48	350
	330	1.9	6000	1210	7.26	2.54	350
	330	1.9	25000	1210	30.25	10.59	350
	330	1.9	105000	1210	127.05	44.48	350
	349	1.9	6000	1210	7.26	2.54	350
	349	1.9	25000	1210	30.25	10.59	350
	349	1.9	105000	1210	127.05	44.48	350
	365	1.9	6000	1210	7.26	2.54	350
	365	1.9	25000	1210	30.25	10.59	350
	365	1.9	105000	1210	127.05	44.48	350
	402	1.9	6000	1210	7.26	2.54	350
	402	1.9	25000	1210	30.25	10.59	350
	402	1.9	105000	1210	127.05	44.48	350
	442	1.9	6000	1210	7.26	2.54	350
	442	1.9	25000	1210	30.25	10.59	350
	442	1.9	105000	1210	127.05	44.48	350
	444	1.9	6000	1210	7.26	2.54	350
	444	1.9	25000	1210	30.25	10.59	350
	444	1.9	105000	1210	127.05	44.48	350
	454	1.9	6000	1210	7.26	2.54	350
	454	1.9	25000	1210	30.25	10.59	350
	454	1.9	105000	1210	127.05	44.48	350

PRODUCT SPECIFICATIONS

Table 2: Mura™ products included in this EPD

Design	Colour Code	Thickness (mm)	Length (mm)	Width (mm)	Area (m ²)	Weight (kg)	Density (g/m ²)
Plain (continued)	458	1.9	6000	1210	7.26	2.54	350
	458	1.9	25000	1210	30.25	10.59	350
	458	1.9	105000	1210	30.25	10.59	350
	487	1.9	6000	1210	7.26	2.54	350
	487	1.9	25000	1210	30.25	10.59	350
	487	1.9	105000	1210	127.05	44.48	350
	542	1.9	6000	1210	7.26	2.54	350
	542	1.9	25000	1210	30.25	10.59	350
	542	1.9	105000	1210	127.05	44.48	350
	551	1.9	6000	1210	7.26	2.54	350
	551	1.9	25000	1210	30.25	10.59	350
	551	1.9	105000	1210	127.05	44.48	350
	550	1.9	6000	1210	7.26	2.54	350
	550	1.9	25000	1210	30.25	10.59	350
	550	1.9	105000	1210	127.05	44.48	350
	577	1.9	6000	1210	7.26	2.54	350
	577	1.9	25000	1210	30.25	10.59	350
	577	1.9	105000	1210	127.05	44.48	350
	908	1.9	6000	1210	7.26	2.54	350
	908	1.9	25000	1210	30.25	10.59	350
	908	1.9	105000	1210	127.05	44.48	350
Dart	454	1.9	6000	1210	7.26	2.54	350
	454	1.9	25000	1210	30.25	10.59	350
	500	1.9	6000	1210	7.26	2.54	350
	500	1.9	25000	1210	30.25	10.59	350
	640	1.9	6000	1210	7.26	2.54	350
	640	1.9	25000	1210	30.25	10.59	350
Haku	201	1.9	6000	1210	7.26	2.54	350
	201	1.9	25000	1210	30.25	10.59	350
	447	1.9	6000	1210	7.26	2.54	350
	447	1.9	25000	1210	30.25	10.59	350
	554	1.9	6000	1210	7.26	2.54	350
	554	1.9	25000	1210	30.25	10.59	350

PRODUCT SPECIFICATIONS

Table 2: Mura™ products included in this EPD

Design	Colour Code	Thickness (mm)	Length (mm)	Width (mm)	Area (m ²)	Weight (kg)	Density (g/m ²)
Key	100	1.9	6000	1210	7.26	2.54	350
	100	1.9	25000	1210	30.25	10.59	350
	348	1.9	6000	1210	7.26	2.54	350
	348	1.9	25000	1210	30.25	10.59	350
	500	1.9	6000	1210	7.26	2.54	350
	500	1.9	25000	1210	30.25	10.59	350
Kome	500	1.9	6000	1210	7.26	2.54	350
	500	1.9	25000	1210	30.25	10.59	350
Nami	440	1.9	6000	1210	7.26	2.54	350
	440	1.9	25000	1210	30.25	10.59	350
	500	1.9	6000	1210	7.26	2.54	350
	500	1.9	25000	1210	30.25	10.59	350
Otto	108	1.9	6000	1210	7.26	2.54	350
	108	1.9	25000	1210	30.25	10.59	350
	141	1.9	6000	1210	7.26	2.54	350
	141	1.9	25000	1210	30.25	10.59	350
	258	1.9	6000	1210	7.26	2.54	350
	258	1.9	25000	1210	30.25	10.59	350
	273	1.9	6000	1210	7.26	2.54	350
	273	1.9	25000	1210	30.25	10.59	350
	362	1.9	6000	1210	7.26	2.54	350
	362	1.9	25000	1210	30.25	10.59	350
	404	1.9	6000	1210	7.26	2.54	350
	404	1.9	25000	1210	30.25	10.59	350
	447	1.9	6000	1210	7.26	2.54	350
	447	1.9	25000	1210	30.25	10.59	350
	468	1.9	6000	1210	7.26	2.54	350
	468	1.9	25000	1210	30.25	10.59	350

ENVIRONMENTAL PRODUCT DECLARATION

PRODUCT, PERFORMANCE, CARE & STEWARDSHIP



PRODUCT PERFORMANCE

Visit www.wovenimage.com to view performance test reports and full product specifications including print repeat details, where relevant, for the EchoPanel® and Mura™ range of products.

PRODUCT CARE

Visit wovenimage.com to view a comprehensive care guide for the EchoPanel® and Mura™ range of products.

PRODUCT STEWARDSHIP

Woven Image is unequivocal in its commitment to the life-cycle management of its products. This means developing and delivering practical take-back and recycling solutions for Woven Image products when they reach end-of-life. In very practical terms this means that Woven Image will take back all uncontaminated textiles, EchoPanel® and Mura™ for recycling from disassembled chairs, workstations and partitions. This includes off cuts, used textiles and panel at end-of-life. Unless otherwise negotiated the customer is responsible for freighting the product to Woven Image in Sydney.

‘Uncontaminated’ refers to end-of-life or residual (off cuts and unused) textiles or EchoPanel® where there is nothing on or stuck to the product to make it impure or ‘contaminated’ in the recycling process. Examples of potential recycling contaminants generally include adhesives, toxic substances, finishes, coatings and any other additive or material that compromises the recycling of the textiles or EchoPanel®. With regard to printed EchoPanel® product, Woven Image will take back product that we have printed for the customer as we use print houses that use environmentally preferable dyes that will not compromise end-of-life recycling processes. As part of our Product Stewardship approach, Woven Image collaborates with Australian and overseas furniture manufacturers to streamline end-of-life recovery and recycling by sharing knowledge and R&D information that makes collection, potential reuse and recycling commercially viable and environmentally advantageous.

Table 3: Content Declaration for printed EchoPanel® and Mura™

Substance	Content %	Cas-Number
Recycled PET (Polyethylene terephthalate)	~60%	25038-59-9
Virgin LPET (Low melt point polyethylene terephthalate)	~40%	25038-59-9
Acrylic binder and pigments (various substances)	<1%	-

Table 3: Content Declaration for non-printed EchoPanel® and Mura™

Substance	Content %	Cas-Number
Recycled PET (Polyethylene terephthalate)	~60%	25038-59-9
Virgin LPET (Low melt point polyethylene terephthalate)	~40%	25038-59-9
Pigments (various substances)	<1%	-



ENVIRONMENTAL PRODUCT DECLARATION

PRODUCT LIFE-CYCLE ASSESSMENT

MANUFACTURING

EchoPanel® boards and Mura™ rolls are manufactured in Australia by Woven Image's supplier. They are manufacture from post-consumer recycled PET (discarded packages/ bottles) fibre and virgin low melt point PET fibre.

HANDLING

The manufactured products are transported by road to Woven Image for storage, quality assurance and preparation for distribution.

Plain EchoPanel® are sent for printing in Australia, while Mura™ rolls are sent by sea to China for printing. The panels are then returned to Woven Image for distribution.

PRINTING (IF APPLICABLE)

The printing process uses energy (natural gas, electricity and LPG), pigments, ink (water based), binder (acrylic), water and plastic bales.

DISTRIBUTION

EchoPanel® and Mura™ are distributed worldwide through international sales offices, Australian sales offices and international distribution partners.

Because of the variability of the distribution according to destination market, this module has not been assessed in this EPD.

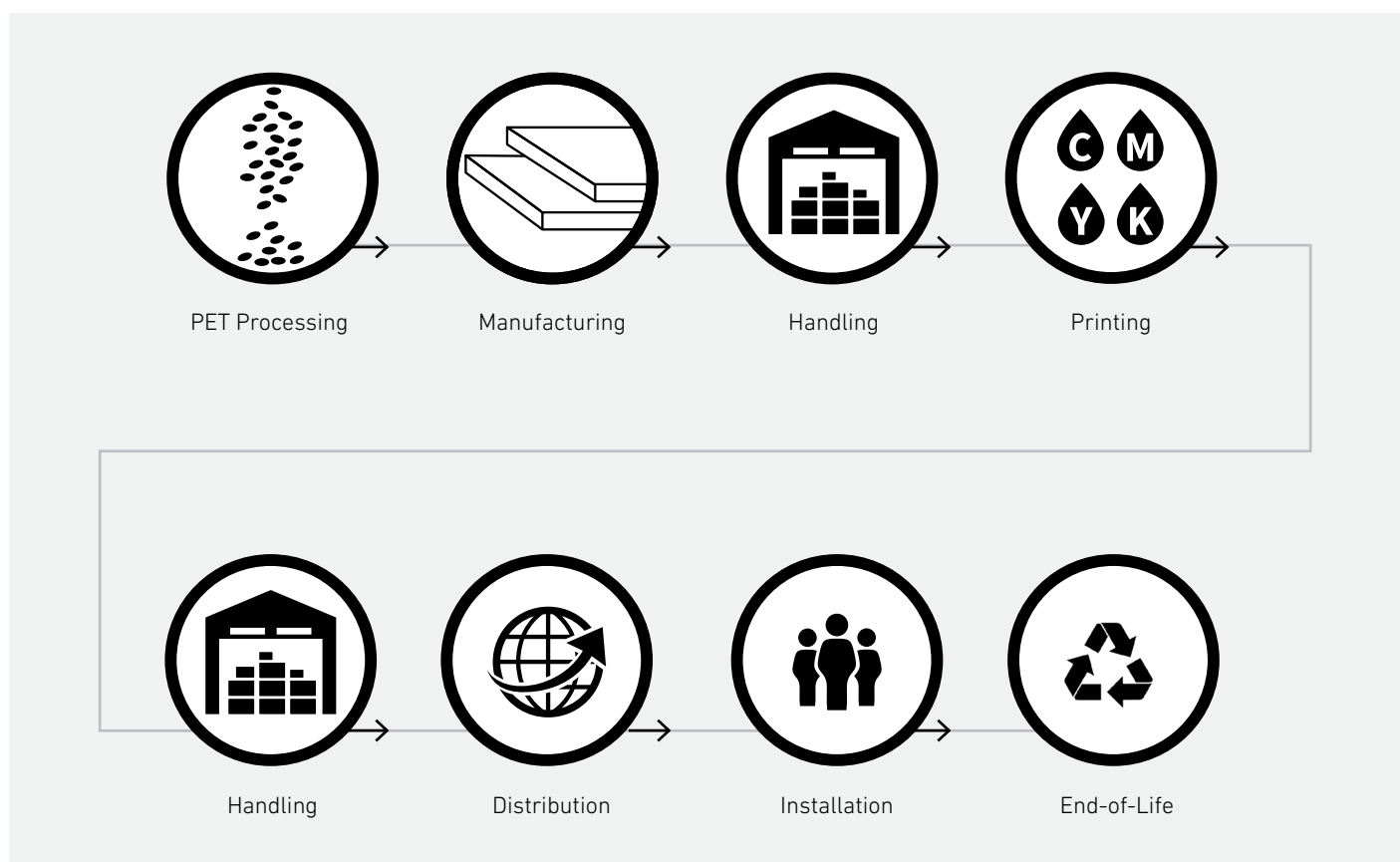
INSTALLATION, USE AND DECONSTRUCTION

The impacts associated with product installation, use and deconstruction are assumed to be negligible and have not been assessed in detail in this EPD.

END-OF-LIFE

There is very limited data available from Woven Image's extended producer responsibility product take-back scheme. For this reason, the conservative assumption is that 100% of the products go to landfill, which corresponds to the final disposition of the product (Module C4). The distance to landfill is assumed to be on average 25km (Module C2).

Figure 2: Life-cycle diagram of Woven Image's EchoPanel® and Mura™



SYSTEM BOUNDARY

The life-cycle of a building product is divided into three process modules according to the General Programme Instructions (GPI) of the Australasian EPD Programme (AEPDP, 2015) and four information modules according to ISO 21930 and EN 15804. The scope of the EPD is “cradle to gate with options” as defined by EN 15804 – the specific system boundary is shown in Figure 2.

The intent of the EPD is to cover the production of panels (Modules A1- A3) and the end-of-life of the products. Figure 3 presents the stages that are included or not declared in this EPD.

SYSTEM BOUNDARY AND SCOPE OF THE STUDY

The following life-cycle stages have not been assessed, as they are deemed negligible, not applicable or too variable for EchoPanel® and Mura™:

- **Transport (A4):** the variability of this module is too high because the products are shipped globally, and the impact depends on final destination.
- **Construction/installation process (A5):** Emissions from this module are considered negligible.
- **Material emissions from usage (B1):** There are no expected emissions from the installed EchoPanel® and Mura™.
- **Maintenance (B2) and Repair (B3):** The installed panels are not maintained or repaired, at least not according to any systematic and/or foreseeable regime over the product service life; therefore, the maintenance and repair are assumed to be zero for the purpose of this LCA.
- **Replacement (B4):** The installed panels are not replaced, at least not according to any systematic and/or foreseeable regime over the product service life; therefore, the amount of repair is assumed to be zero for the purpose of this LCA.
- **Refurbishment (B5):** The installed panels are not refurbished, at least not according to any systematic and/or foreseeable regime over the product service life; therefore, the amount of refurbishment is assumed to be zero for the purpose of this LCA.
- **Operational Energy (B6) and Operational Water Use (B7):** There is no energy or water use for the installed panels, at least not according to any systematic and/or foreseeable regime over the product service life; therefore, the amount of refurbishment is assumed to be zero for the purpose of this LCA.
- **Reuse, recovery, recycling potential (D):** Because the assumption is that 100% of the products go to landfill, this module is not applicable at the moment.

Figure 3: System boundary and scope of study

Product stage			Construction stage		Use stage							End-of-life stage				Benefits & loads for next product system
Raw Material Supply	Transport	Manufacturing	Transport	Construction Installation Process	Use	Maintenance inc. Transport	Repair inc. Transport	Replacement inc. Transport	Refurbishment inc. Transport	Operational Energy Use	Operational Water Use	Deconstruction & Demolition	Transport	Re-use Recycling	Final Disposal	Re-use, Recovery Potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	MND

X = module included in EPD

MND = module not declared (does not indicate zero impact result) – see text above table for explanation.

LIFE - CYCLE ASSESSMENT

METHODOLOGY

A summary of the life-cycle assessment parameters is given in Figure 3. Life-cycle Assessment (LCA) requires a compilation of the inputs, outputs and environmental impacts of a product system throughout its life-cycle. LCA can enable businesses to identify resource flows, waste generation and environmental impacts (such as climate change) associated with the provision of products and services.

Life-cycle thinking is a core concept in sustainable consumption and production for policy and business.

Upstream and downstream consequences of decisions must be taken into account to help avoid the shifting of burdens from one type of environmental impact to another, from one political region to another, or from one stage to another, in a product's life-cycle from the cradle to grave.

According to EN 15804, EPDs of construction products may not be comparable if they do not comply with this standard, and EPDs might not be comparable, particularly if different functional units are used.

Table 4: Product characteristics

Product characteristics of EchoPanel® or Mura™ panels	
Declared Unit	1m ² of EchoPanel® or Mura™ panels
Geographical Coverage	Australia
LCA Scope	Cradle to gate with options

DECLARED UNIT

For this EPD, the selected scope is cradle to gate with options, for a declared unit of 1m² of product.

The results can be used for comparative assertions between Woven Image products with comparable function and assessment scope.

CORE DATA COLLECTION

Life-cycle data has been sourced first hand:

- Upstream data on fabricated panel inputs was retrieved from Woven Image supplier's EPD;
- Core manufacturing data was collected directly from Woven Image and its different suppliers, pertaining to activity in 2016/2017 Financial Year;
- Product properties, applications and recyclability information retrieved from Woven Image catalogue and material safety data sheets.
- These data sources and the quality of each module is presented in Table 5 below.

Table 5: Data source and quality

	Product data	Module A1	Module A2	Module A3	Module C1-C4
Data	Range & physical properties.	Raw material inputs. Energy inputs. Transportation from overseas raw materials to suppliers in Australia.	Transportation inside Australia.	Printing inputs. Waste outputs. Water. Transportation inside Australia & overseas to China ¹ .	Resource recovery rates.
Source	Collected by EchoPanel® & Mura™ producer's staff & Woven Image staff.	Panels: retrieved from EchoPanel® & Mura™ producers EPD. Energy: Woven Image staff & printing companies' staff.	Supplier locations provided by Woven Image. Distances calculated with online tool. Transport specifications assumed from Ecoinvent 3.5 processes.	Collected by Woven Image staff & printing companies' staff.	Based on results of Woven Image's 'Take-Back Programme'
Quality	Good	Good	Good	Medium	Good

¹ Only for Dart, Haku, Kome and Nami patterns.

BACKGROUND DATA

Generic background data was sourced for end-of-life module, which was adapted to represent Woven Image product as accurately as possible. Raw materials and transport were obtained from the producer's EPD 2018.

Data were primarily modelled with the AusLCI (AusLCI, 2017) and ecoinvent 3.5 (Ecoinvent Centre, 2016) databases. All background data used was less than 10 years old.

CUT OFF CRITERIA

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR CPC 54 Version 2.2.2017-05-30 (EPD International, 2017). All other reported data were incorporated and modelled using the best available life-cycle inventory data.

ALLOCATION

Allocation was carried out in accordance with the PCR (EPD International, 2017). No-allocation between co-products in the core module was used, as there were no co-products created during manufacturing.

PRODUCT GROUPING

Due to the vast number of products in this project, (Tables 1 and 2) these have been grouped according to similar characteristics and type of products. For all groups, one representative product was selected for the publication of results according to highest sales in the 2016/17 Woven Image's financial year.

The groups, products within each and the selected products are presented in Table 6 below. The products are separated between Mura™ and EchoPanel®. Within Mura™ there are two groups, nonprinted and printed. EchoPanel® are separated by thickness, and within each thickness if the panels are non-printed or printed. In addition to the results in the following section, the maximum variation in results for each group is presented in Appendix A.

The LCA report has been updated from previous work developed in 2018, with updated colours and background data from ecoinvent 3.3 to ecoinvent 3.5 and AusLCI 2017. The update in background data affects all the products (although not significantly).

Table 6: Product grouping

Product Group	Products In Each Group	Selected Product
Mura™ printed in China	Dart pattern, Haku pattern, Kome pattern, Nami pattern, Otto pattern,	Otto pattern
Mura™ non-printed rolls	Non-printed	Non-printed
EchoPanel® 7mm printed	Frequency pattern, Hex pattern,	Black Hex pattern
EchoPanel® 7mm non-printed	Non-printed	Black non-printed
EchoPanel® 12mm printed on one side	Puzzle pattern	Coloured Puzzle pattern
EchoPanel® 12mm printed on both sides	Frequency pattern, Hex pattern, Tilt pattern, Trapeze pattern, Trio pattern, Astro pattern	Coloured Hex pattern
EchoPanel® 12mm non-printed	Non-printed	Coloured non-printed
EchoPanel® 24mm non-printed	Non-printed	Coloured non-printed

ENVIRONMENTAL PERFORMANCE



ENVIRONMENTAL PERFORMANCE

POTENTIAL ENVIRONMENTAL IMPACT

This section presents the potential environmental impacts, use of resources and waste production of 1m² of the representative Woven Image products, according to the grouping presented on page 26.

Table 7: Mura™ Otto wallcovering per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	1.59E+00	4.47E-03	7.03E-03
ODP (kgCFC11 eq)	9.52E-08	7.78E-10	5.89E-10
POCP (kgC ₂ H ₂ eq)	4.25E-04	8.47E-07	1.76E-06
AP (kgSO ₂ eq)	8.16E-03	2.15E-05	2.85E-05
EP (kgPO ₄ ³⁻ eq)	1.01E-03	4.11E-06	6.24E-06
ADPE (kgSb eq)	4.20E-06	2.42E-08	2.87E-08
ADPF (MJ)	2.61E+01	6.71E-02	1.02E-01

Table 8: Mura™ wallcovering non-printed per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	1.26E+00	4.47E-03	7.03E-03
ODP (kgCFC11 eq)	6.40E-08	7.78E-10	5.89E-10
POCP (kgC ₂ H ₂ eq)	2.15E-04	8.47E-07	1.76E-06
AP (kgSO ₂ eq)	4.98E-03	2.15E-05	2.85E-05
EP (kgPO ₄ ³⁻ eq)	7.23E-04	4.11E-06	6.24E-06
ADPE (kgSb eq)	2.89E-06	2.42E-08	2.87E-08
ADPF (MJ)	2.16E+01	6.71E-02	1.02E-01

KEY:

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | AP = Acidification Potential | EP = Eutrophication Potential |
 POCP = Photochemical Oxidant Formation Potential | ADPE = Abiotic Resource Depletion Potential – Elements |
 ADPF = Abiotic Resource Depletion Potential – Fossil Fuel |

POTENTIAL ENVIRONMENTAL IMPACT

Table 9: 7mm EchoPanel® HEX per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	5.17E+00	1.79E-02	2.81E-02
ODP (kgCFC11 eq)	2.70E-07	3.11E-09	2.36E-09
POCP (kgC ₂ H ₂ eq)	8.84E-04	3.39E-06	7.03E-06
AP (kgSO ₂ eq)	2.09E-02	8.60E-05	1.14E-04
EP (kgPO ₄ ³⁻ eq)	3.08E-03	1.64E-05	2.50E-05
ADPE (kgSb eq)	1.12E-05	9.69E-08	1.15E-07
ADPF (MJ)	8.83E+01	2.68E-01	4.06E-01

Table 10: 7mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	5.02E+00	1.79E-02	2.81E-02
ODP (kgCFC11 eq)	2.64E-07	3.11E-09	2.36E-09
POCP (kgC ₂ H ₂ eq)	8.55E-04	3.39E-06	7.03E-06
AP (kgSO ₂ eq)	2.03E-02	8.60E-05	1.14E-04
EP (kgPO ₄ ³⁻ eq)	2.95E-03	1.64E-05	2.50E-05
ADPE (kgSb eq)	1.10E-05	9.68E-08	1.15E-07
ADPF (MJ)	8.59E+01	2.68E-01	4.06E-01

Table 11: 12mm EchoPanel® Tilt per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	8.69E+00	3.07E-02	4.82E-02
ODP (kgCFC11 eq)	4.41E-07	5.34E-09	4.04E-09
POCP (kgC ₂ H ₂ eq)	1.50E-03	5.80E-06	1.20E-05
AP (kgSO ₂ eq)	3.46E-02	1.47E-04	1.96E-04
EP (kgPO ₄ ³⁻ eq)	5.04E-03	2.82E-05	4.28E-05
ADPE (kgSb eq)	1.99E-05	1.66E-07	1.97E-07
ADPF (MJ)	1.48E+02	4.60E-01	6.97E-01

KEY:

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | AP = Acidification Potential | EP = Eutrophication Potential |
 POCP = Photochemical Oxidant Formation Potential | ADPE = Abiotic Resource Depletion Potential – Elements |
 ADPF = Abiotic Resource Depletion Potential – Fossil Fuel |

POTENTIAL ENVIRONMENTAL IMPACT

Table 12: 12mm EchoPanel® Puzzle printed on one side per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	8.69E+00	3.07E-02	4.82E-02
ODP (kgCFC11 eq)	4.41E-07	5.34E-09	4.04E-09
POCP (kgC ₂ H ₂ eq)	1.50E-03	5.80E-06	1.20E-05
AP (kgSO ₂ eq)	3.46E-02	1.47E-04	1.96E-04
EP (kgPO ₄ ³⁻ eq)	5.04E-03	2.82E-05	4.28E-05
ADPE (kgSb eq)	1.99E-05	1.66E-07	1.97E-07
ADPF (MJ)	1.48E+02	4.60E-01	6.97E-01

Table 13: 12mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	8.50E+00	3.07E-02	4.82E-02
ODP (kgCFC11 eq)	4.32E-07	5.34E-09	4.04E-09
POCP (kgC ₂ H ₂ eq)	1.46E-03	5.80E-06	1.20E-05
AP (kgSO ₂ eq)	3.37E-02	1.47E-04	1.96E-04
EP (kgPO ₄ ³⁻ eq)	4.89E-03	2.82E-05	4.28E-05
ADPE (kgSb eq)	1.95E-05	1.66E-07	1.97E-07
ADPF (MJ)	1.45E+02	4.60E-01	6.97E-01

TABLE 14: 24mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
GWP (kgCO ₂ eq)	1.06E+01	3.83E-02	6.03E-02
ODP (kgCFC11 eq)	5.51E-07	6.67E-09	5.05E-09
POCP (kgC ₂ H ₂ eq)	1.82E-03	7.26E-06	1.51E-05
AP (kgSO ₂ eq)	4.21E-02	1.84E-04	2.45E-04
EP (kgPO ₄ ³⁻ eq)	6.10E-03	3.52E-05	5.35E-05
ADPE (kgSb eq)	2.43E-05	2.07E-07	2.46E-07
ADPF (MJ)	1.82E+02	5.75E-01	8.71E-01

KEY:

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | AP = Acidification Potential | EP = Eutrophication Potential |

POCP = Photochemical Oxidant Formation Potential | ADPE = Abiotic Resource Depletion Potential – Elements |

ADPF = Abiotic Resource Depletion Potential – Fossil Fuel |

USE OF RESOURCES

Table 15: Mura™ Otto wallcovering per 1m²

	A1-A3	C2	C4
PERE (MJ)	9.69E-01	8.78E-04	1.23E-03
PERM (MJ)	0.00E+00	INA	INA
PERT (MJ)	9.69E-01	8.78E-04	1.23E-03
PENRE (MJ)	2.65E+01	7.13E-02	1.06E-01
PENRM (MJ)	3.46E+00	INA	INA
PENRT (MJ)	3.00E+01	7.13E-02	1.06E-01
SM (kg)	2.18E-01	INA	INA
RSF (MJ)	0	INA	INA
NRSF (MJ)	0	INA	INA
FW (m3)	2.01E-02	1.08E-05	3.33E-05

Table 16: Mura™ wallcovering non-printed per 1m²

	A1-A3	C2	C4
PERE (MJ)	7.54E-01	8.78E-04	1.23E-03
PERM (MJ)	0	INA	INA
PERT (MJ)	7.54E-01	8.78E-04	1.23E-03
PENRE (MJ)	2.21E+01	7.13E-02	1.06E-01
PENRM (MJ)	3.46E+00	INA	INA
PENRT (MJ)	2.56E+01	7.13E-02	1.06E-01
SM (kg)	2.18E-01	INA	INA
RSF (MJ)	0	INA	INA
NRSF (MJ)	0	INA	INA
FW (m3)	1.70E-02	1.08E-05	3.33E-05

KEY:

PERE = Use of renewable primary energy excluding raw materials | PERM = Use of renewable primary energy resources used as raw materials |
 PERT = Total use of renewable primary energy resources | PENRE = Use of non-renewable primary energy excluding raw materials |
 PENRM = Use of non-renewable primary energy resources used as raw materials | PENRT = Total use of non-renewable primary energy resources |
 SM = Use of secondary material | RSF = Use of renewable secondary fuels | NRSF = Use of non-renewable secondary fuels |
 FW = Use of net fresh water | INA = Indicator not assessed |

USE OF RESOURCES

Table 17: 7mm EchoPanel® Hex per 1m²

	A1-A3	C2	C4
PERE (MJ)	2.89E+00	3.51E-03	4.91E-03
PERM (MJ)	0.00E+00	INA	INA
PERT (MJ)	2.89E+00	3.51E-03	4.91E-03
PENRE (MJ)	8.98E+01	2.85E-01	4.23E-01
PENRM (MJ)	1.39E+01	INA	INA
PENRT (MJ)	1.04E+02	2.88E-01	4.23E-01
SM (kg)	8.73E-01	INA	INA
RSF (MJ)	0.00E+00	INA	INA
NRSF (MJ)	0.00E+00	INA	INA
FW (m3)	6.77E-02	4.31E-05	1.33E-04

Table 18: 7mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
PERE (MJ)	2.86E+00	3.51E-03	4.91E-03
PERM (MJ)	0	INA	INA
PERT (MJ)	2.86E+00	3.51E-03	4.91E-03
PENRE (MJ)	8.74E+01	2.85E-01	4.23E-01
PENRM (MJ)	1.39E+01	INA	INA
PENRT (MJ)	1.01E+02	2.85E-01	4.23E-01
SM (kg)	8.73E-01	INA	INA
RSF (MJ)	0	INA	INA
NRSF (MJ)	0	INA	INA
FW (m3)	6.68E-02	4.31E-05	1.33E-04

KEY:

PERE = Use of renewable primary energy excluding raw materials | PERM = Use of renewable primary energy resources used as raw materials |
 PERT = Total use of renewable primary energy resources | PENRE = Use of non-renewable primary energy excluding raw materials |
 PENRM = Use of non-renewable primary energy resources used as raw materials | PENRT = Total use of non-renewable primary energy resources |
 SM = Use of secondary material | RSF = Use of renewable secondary fuels | NRSF = Use of non-renewable secondary fuels |
 FW = Use of net fresh water | INA = Indicator not assessed |

USE OF RESOURCES

Table 19: 12mm EchoPanel® Tilt per 1m²

	A1-A3	C2	C4
PERE (MJ)	4.91E+00	6.02E-03	8.41E-03
PERM (MJ)	0	INA	INA
PERT (MJ)	4.91E+00	6.02E-03	8.41E-03
PENRE (MJ)	1.52E+02	4.89E-01	7.25E-01
PENRM (MJ)	2.38E+01	INA	INA
PENRT (MJ)	1.75E+02	4.89E-01	7.25E-01
SM (kg)	1.50E+00	0.00E+00	0.00E+00
RSF (MJ)	0	0.00E+00	0.00E+00
NRSF (MJ)	0	0.00E+00	0.00E+00
FW (m3)	1.17E-01	7.39E-05	2.28E-04

Table 20: 12mm EchoPanel® Puzzle printed on one side per 1m²

	A1-A3	C2	C4
PERE (MJ)	4.91E+00	6.02E-03	8.41E-03
PERM (MJ)	0	INA	INA
PERT (MJ)	4.91E+00	6.02E-03	8.41E-03
PENRE (MJ)	1.51E+02	4.89E-01	7.25E-01
PENRM (MJ)	2.38E+01	INA	INA
PENRT (MJ)	1.75E+02	4.89E-01	7.25E-01
SM (kg)	1.50E+00	INA	INA
RSF (MJ)	0	INA	INA
NRSF (MJ)	0	INA	INA
FW (m3)	1.17E-01	7.39E-05	2.28E-04

KEY:

PERE = Use of renewable primary energy excluding raw materials | PERM = Use of renewable primary energy resources used as raw materials |
 PERT = Total use of renewable primary energy resources | PENRE = Use of non-renewable primary energy excluding raw materials |
 PENRM = Use of non-renewable primary energy resources used as raw materials | PENRT = Total use of non-renewable primary energy resources |
 SM = Use of secondary material | RSF = Use of renewable secondary fuels | NRSF = Use of non-renewable secondary fuels |
 FW = Use of net fresh water | INA = Indicator not assessed |

USE OF RESOURCES

Table 21: 12mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
PERE (MJ)	4.86E+00	6.02E-03	8.41E-03
PERM (MJ)	0	INA	INA
PERT (MJ)	4.69E+00	6.02E-03	8.41E-03
PENRE (MJ)	1.49E+02	4.89E-01	7.25E-01
PENRM (MJ)	2.38E+01	INA	INA
PENRT (MJ)	1.72E+02	4.89E-01	7.25E-01
SM (kg)	1.50E+00	INA	INA
RSF (MJ)	0	INA	INA
NRSF (MJ)	0	INA	INA
FW (m3)	1.15E-01	7.39E-05	2.28E-04

Table 22: 24mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
PERE (MJ)	6.05E+00	7.52E-03	1.05E-02
PERM (MJ)	0.00E+00	INA	INA
PERT (MJ)	6.05E+00	7.52E-03	1.05E-02
PENRE (MJ)	1.86E+02	6.11E-01	9.07E-01
PENRM (MJ)	2.97E+01	INA	INA
PENRT (MJ)	2.16E+02	6.11E-01	9.07E-01
SM (kg)	1.87E+00	INA	INA
RSF (MJ)	0.00E+00	INA	INA
NRSF (MJ)	0.00E+00	INA	INA
FW (m3)	1.44E-01	9.24E-05	2.85E-04

KEY:

PERE = Use of renewable primary energy excluding raw materials | PERM = Use of renewable primary energy resources used as raw materials |
 PERT = Total use of renewable primary energy resources | PENRE = Use of non-renewable primary energy excluding raw materials |
 PENRM = Use of non-renewable primary energy resources used as raw materials | PENRT = Total use of non-renewable primary energy resources |
 SM = Use of secondary material | RSF = Use of renewable secondary fuels | NRSF = Use of non-renewable secondary fuels |
 FW = Use of net fresh water | INA = Indicator not assessed |

WASTE PRODUCTION

Table 23: Mura™ Otto wallcovering per 1m²

	A1-A3	C2	C4
HWD (kg)	1.13E-04	5.66E-08	1.11E-07
NHWD (kg)	2.37E-01	2.00E-03	3.33E-01
RWD (kg)	4.38E-05	4.37E-07	2.39E-09
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

Table 24: Mura™ wallcovering non-printed per 1m²

	A1-A3	C2	C4
HWD (kg)	1.09E-04	5.66E-08	1.11E-07
NHWD (kg)	1.24E-01	2.00E-03	3.33E-01
RWD (kg)	2.99E-05	4.37E-07	2.39E-09
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

Table 25: 7mm EchoPanel® Hex per 1m²

	A1-A3	C2	C4
HWD (kg)	4.30E-04	2.26E-07	4.42E-07
NHWD (kg)	4.99E-01	8.00E-03	1.33E+00
RWD (kg)	1.22E-04	1.75E-06	9.56E-09
CRE (kg)	0.00E+00	INA	INA
MRE (kg)	0.00E+00	INA	INA
MER (kg)	0.00E+00	INA	INA
EE (MJ)	0.00E+00	INA	INA

KEY:

HWD = Hazardous waste disposed | NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed | CRE = Components for reuse | MRE = Materials for recycling | MER = Materials for energy recovery | EE = Exported energy | INA = Indicator not assessed |

WASTE PRODUCTION

Table 26: 7mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
HWD (kg)	4.30E-04	2.26E-07	4.42E-07
NHWD (kg)	4.75E-01	8.00E-03	1.33E+00
RWD (kg)	1.20E-04	1.75E-06	9.56E-09
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

Table 27: 12mm EchoPanel® Tilt per 1m²

	A1-A3	C2	C4
HWD (kg)	7.45E-04	3.88E-07	7.58E-07
NHWD (kg)	8.78E-01	1.37E-02	2.28E+00
RWD (kg)	2.04E-04	2.99E-06	1.64E-08
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

Table 28: 12mm EchoPanel® Puzzle printed on one side per 1m²

	A1-A3	C2	C4
HWD (kg)	7.45E-04	3.88E-07	7.58E-07
NHWD (kg)	8.78E-01	1.37E-02	2.28E+00
RWD (kg)	2.04E-04	2.99E-06	1.64E-08
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

KEY:

HWD = Hazardous waste disposed | NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed | CRE = Components for reuse | MRE = Materials for recycling | MER = Materials for energy recovery | EE = Exported energy | INA = Indicator not assessed |

WASTE PRODUCTION

Table 29: 12mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
HWD (kg)	7.43E-04	3.88E-07	7.58E-07
NHWD (kg)	8.36E-01	1.37E-02	2.28E+00
RWD (kg)	2.01E-04	2.99E-06	1.64E-08
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

Table 30: 24mm EchoPanel® non-printed per 1m²

	A1-A3	C2	C4
HWD (kg)	9.21E-04	4.85E-07	9.48E-07
NHWD (kg)	1.04E+00	1.71E-02	2.86E+00
RWD (kg)	2.57E-04	3.74E-06	2.05E-08
CRE (kg)	0	INA	INA
MRE (kg)	0	INA	INA
MER (kg)	0	INA	INA
EE (MJ)	0	INA	INA

KEY:

HWD = Hazardous waste disposed | NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed | CRE = Components for reuse | MRE = Materials for recycling | MER = Materials for energy recovery | EE = Exported energy | INA = Indicator not assessed |

INTERPRETATION OF THE RESULTS



INTERPRETATION OF RESULTS

Raw material supply and manufacturing (Modules A1-3) are the main contributor to the different impact categories analysed for all of Woven Image's products, ranging from 98% to 100% of total impact, with the exception of non-hazardous waste, where the end-of-life (Module C4) represents the highest impact, because of the assumption that all products go to landfill at the end of their life.

Module A1, the raw materials, are mainly responsible for the impact, because of PET fibres and the energy used to process them.

Overall, non-printed panels have lower impact than their printing counterpart. When considering printing on both sides for 12mm EchoPanel®, the differences in potential impact, use of resources and generation of waste are between 0% and 3%, depending on impact.

Figure 4: Average contribution of modules A1-A3, C2 and C4 for an average of Mura™ wallcovering. Otto (China) and non-printed.

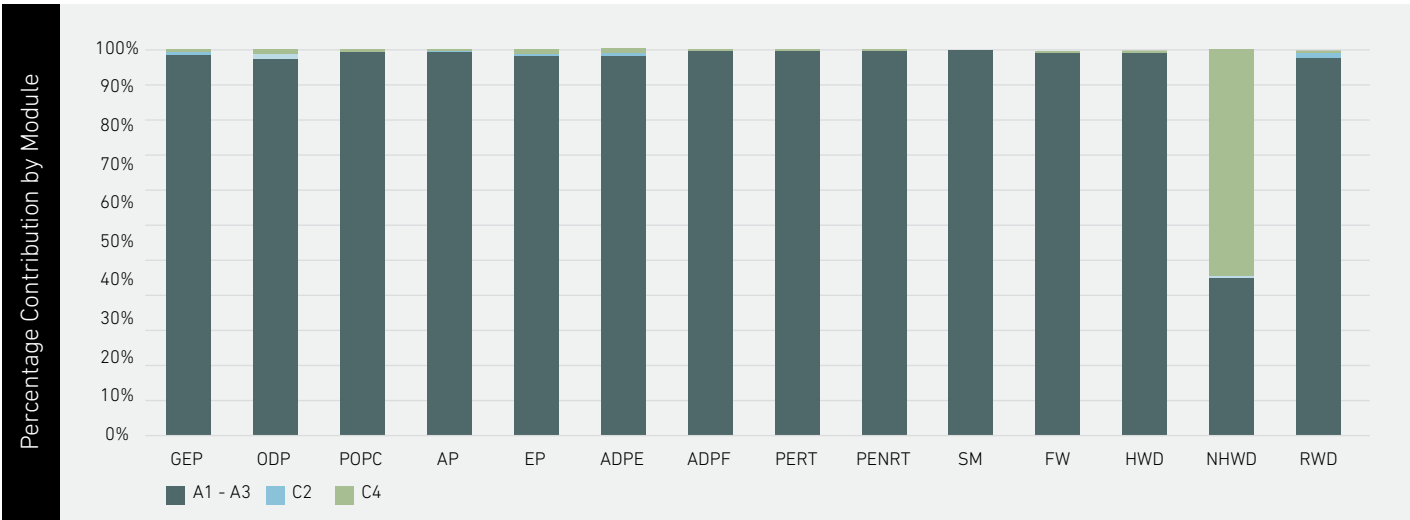
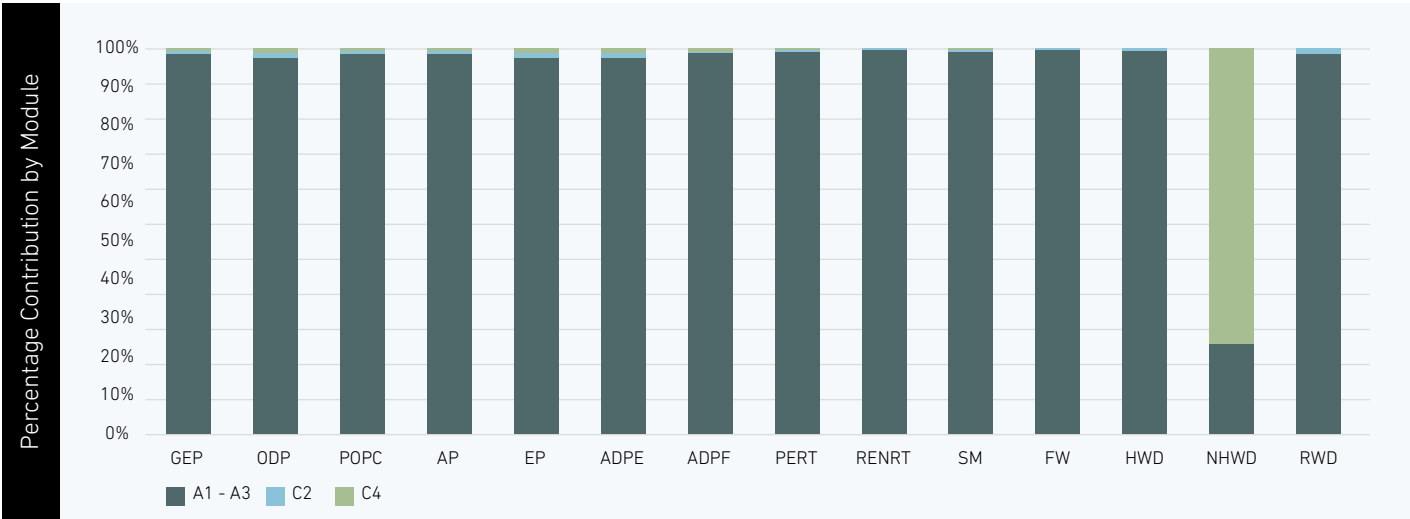


Figure 5: Average contribution of modules A1-A3, C2 and C4 for an average of EchoPanel® 12mm panels: Black and coloured Puzzle pattern (printed on one side), coloured Tilt pattern (printed on both sides), black Hex pattern (printed on both sides) and black and coloured non-printed.



LEGEND

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | POPC = Photochemical Oxidant Formation Potential | AP = Acidification Potential | EP = Eutrophication Potential | ADPE = Abiotic Resource Depletion Potential – Elements | ADPF = Abiotic Resource Depletion Potential – Fossil Fuel | PERT = Total use of renewable primary energy resources | PENRT = Total use of non-renewable primary energy resources | SM = Use of secondary material | FW = Use of net fresh water | HWD = Hazardous waste disposed | NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed

GLOSSARY

Abiotic Depletion: impact of the uptake of resources in the world's reserves of metals and of fossil fuels.

Acidification Potential: the impact of the emissions of acidic substances, namely the decrease in pH of soils and aquatic environments.

BREEAM: a sustainability assessment method for master planning projects, infrastructure and buildings used in the UK and Europe. It recognises and reflects the value in higher performing assets across the built environment life-cycle, from new construction to in-use and refurbishment.

End-of-Life (EoL): is a term used with respect to consumer products, indicating that the product is at the end of its useful life.

Energy Resources: this group of impact categories accounts for the cumulative energy requirements of renewable and non-renewable fuels.

Environmental Product Declaration (EPD): a third-party verified ecolabel that reports on the life-cycle environmental impacts of a product according to product-specific guidelines or Product Category Rules.

Eutrophication Potential: the impact of excessive nutrients (for instance nitrogen from fertilisers) in aquatic environments.

Functional Unit: expresses the function of the system being analysed in an LCA and is used to provide a scale to reported impacts.

Global Warming Potential: the impact of the emission of greenhouse gases to the atmosphere in the transformation of climate.

Greenhouse Gases: umbrella term for the different gaseous substances that are known to interfere with the Earth's atmosphere's ability to deflect radiation incoming from the sun, causing it to accumulate within the atmosphere, which leads to global warming.

Green Star: a sustainability rating scheme used in countries such as Australia and New Zealand that assesses the performance of buildings and fit outs across a range of sustainability issues.

LEED: similar concept to Green Star but operating in the United States of America and on a different evaluation framework, being hosted by the U.S. Green Building Council.

Life-Cycle Assessment (LCA): a framework to evaluate the environmental, social and economic impact of delivering a good and service.

Life-Cycle Inventory (LCI): the compilation of quantitative data that populates a life-cycle model, e.g. the amount in kg of a material going into a manufacturing process.

Life-Cycle Model: the representation of a production system that organises processes, inputs and outputs and that allows for the execution of a life-cycle assessment.

Noise Reduction Coefficient (NRC): an indication of acoustic performance, which measures the amount of sound absorbed by a surface in a scale of 0 (all is reflected) to 1 (all is absorbed).

Ozone depletion potential: the impact of ozone-depleting substances, such as some refrigerants, on the decline of ozone in the Earth's stratosphere.

Product Category Rules (PCR): set of product-type specific guidelines to undertake life-cycle assessments conducting to EPDs.

Polyethylene Terephthalate (PET): a type of thermoplastic polymer, which can be processed by heat into fibres, packaging and engineered resins.

Photochemical Ozone Creation Potential: the impact of the emission of substances such as VOCs to the atmosphere, which merge with ozone and create smog.

Secondary Materials: resource use indicator conveying the recycled input into life-cycles.

System Boundaries: term used to describe the limits of the processes and materials that are included and excluded from a life-cycle assessment.

VOCs or Volatile Organic Compounds: designates a generic group of organic chemicals that commonly exists in vapour form and can be harmful to human health when in high concentrations.

Water Depletion: measures the impact of water use on available water resources.

PROGRAMME INFORMATION & VERIFICATION

See PCR for detailed requirements.



Programme:	EPD Australasia Ltd 315a Hardy Street, Nelson 7010, New Zealand www.epd-australasia.com
EPD registration number:	S-P-01162
Published:	2018-09-24
Valid until:	2023-09-24
Product Category Rules:	PCR for Construction Products and Construction Services CPC 54 Version 2.2. 2017-05-30
Product group classification:	UN CPC 54
Reference year for data:	2016/2017
Geographical scope:	Australia
Product category rules (PCR):	PCR for Construction Products and Construction Services CPC 54 Version 2.2. 2017-05-30
PCR review was conducted by:	IVL Swedish Environmental Research Institute Moderator: Martin Erlandsson, martin.erlandsson@ivl.se
Independent verification of the declaration and data, according to ISO 14025:2006:	6 EPD Process Certification (internal) 6 EPD Verification (external)
Third party verifier:	Jane Anderson ConstructionLCA Limited 3 Evergreen Drive, Caistor, LN7 6NS United Kingdom m: +44 (0) 7932 696077 email: jane@constructionlca.co.uk Approved by EPD Australasia

MANDATORY STATEMENTS

- Exclusion of small amounts follow the rules of Product Category Rules of Construction Materials, and include the infrastructure, construction, production equipment and tools that are not directly consumed in the production process; and personnel related impacts. These are deemed negligible.
- No cut offs were necessary for the modules included in this EPD.
- The scenarios included are currently in use and are representative for one of the most likely scenarios alternatives.
- The EPD of construction products may not be comparable if they do not comply with the requirements of comparability set in EN 15804. EPDs within the same product category but from different programmes may not be comparable.
- For version 1.1 the LCA report has been updated from previous work developed in 2018, with updated colours and background data from ecoinvent 3.3 to ecoinvent 3.5 and AusLCI 2017. The update in background data affects all the products (although not significantly).

CONTACT INFORMATION

EPD Owner:

Woven Image Pty Ltd
37-39 Chard Road, Brookvale,
NSW, 2100, Australia
www.wovenimage.com
info@wovenimage.com



LCA Author:

Edge Environment Pty Ltd
Level 5, 39 East Esplanade,
Manly, NSW, 2095, Australia
www.edgeenvironment.com
info@edgeenvironment.com



Programme Operator:

EPD Australasia Ltd
315a Hardy Street,
Nelson 7010, New Zealand
www.epd-australasia.com
info@epd-australasia.com



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APPENDIX: A

Table 31: Variation between Otto Mura™ pattern and other patterns printed in China

Impact Category	Selected Product: OTTO	Variation From Selected Product:			
		DART	HAKU	KOME	NAMI
GWP	1.84E+00	-9%	1%	1%	0%
ODP	1.40E-07	-9%	1%	1%	0%
POCP	4.68E-04	-23%	2%	2%	0%
AP	9.18E-03	-12%	1%	1%	0%
EP	1.19E-03	-8%	1%	1%	0%
ADPE	4.37E-06	-20%	2%	2%	0%
ADPF	2.97E+01	-7%	1%	1%	0%
PERE	9.89E-01	-12%	1%	1%	0%
PERM	0	-	-	--	-
PERT	9.89E-01	-12%	1%	1%	0%
PENRE	3.04E+01	-7%	1%	1%	0%
PENRM	3.46E+00	0%	0%	0%	0%
PENRT	3.39E+01	-6%	1%	1%	0%
SM	2.18E-01	0%	0%	0%	0%
RSF	0	-	-	-	-
NRSF	0	-	-	-	-
FW	2.06E-02	-9%	1%	1%	0%
HWD	1.14E-04	-2%	0%	0%	0%
NHWD	5.95E-01	-12%	1%	1%	0%
RWD	6.89E-05	-6%	1%	1%	0%
CRE	0	-	-	-	-
MRE	0	-	-	-	-
MER	0	-	-	-	-
EE	0	-	-	-	-

LEGEND

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | POCP = Photochemical Oxidant Formation Potential | AP = Acidification Potential | EP = Eutrophication Potential | ADPE = Abiotic Resource Depletion Potential – Elements | ADPF = Abiotic Resource Depletion Potential – Fossil Fuel | PERE = Use of renewable primary energy excluding raw materials | PERM = Use of renewable primary energy resources used as raw materials | PERT = Total use of renewable primary energy resources | PENRE = Use of non-renewable primary energy excluding raw materials | PENRM = Use of non-renewable primary energy resources used as raw materials | PENRT = Total use of non-renewable primary energy resources | SM = Use of secondary material | RSF = Use of renewable secondary fuels | NRSF = Use of non-renewable secondary fuels | FW = Use of net fresh water | HWD = Hazardous waste disposed | NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed | CRE = Components for reuse | MRE = Materials for recycling | MER = Materials for energy recovery | EE = Exported energy |

APPENDIX: A

Table 32: Variation between 7mm Hex EchoPanel® pattern and other 7mm printing patterns (average colour)

Impact Category	Selected Product: HEX	Variation From Selected Product:
		FREQUENCY
GWP	6.12E+00	0%
ODP	4.40E-07	0%
POCP	1.05E-03	0%
AP	2.49E-02	0%
EP	3.76E-03	0%
ADPE	1.21E-05	0%
ADPF	1.02E+02	0%
PERE	2.96E+00	0%
PERM	0	-
PERT	2.96E+00	0%
PENRE	1.05E+02	0%
PENRM	1.39E+01	0%
PENRT	1.18E+02	0%
SM	8.73E-01	0%
RSF	0	-
NRSF	0	-
FW	6.97E-02	0%
HWD	4.37E-04	0%
NHWD	1.95E+00	0%
RWD	2.18E-04	0%
CRE	0	-
MRE	0	-
MER	0	-
EE	0	-

LEGEND

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | POCP = Photochemical Oxidant Formation Potential | AP = Acidification Potential | EP = Eutrophication Potential | ADPE = Abiotic Resource Depletion Potential – Elements | ADPF = Abiotic Resource Depletion Potential – Fossil Fuel | PERE = Use of renewable primary energy excluding raw materials | PERM = Use of renewable primary energy resources used as raw materials | PERT = Total use of renewable primary energy resources | PENRE = Use of non-renewable primary energy excluding raw materials | PENRM = Use of non-renewable primary energy resources used as raw materials | PENRT = Total use of non-renewable primary energy resources | SM = Use of secondary material | RSF = Use of renewable secondary fuels | NRSF = Use of non-renewable secondary fuels | FW = Use of net fresh water | HWD = Hazardous waste disposed | NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed | CRE = Components for reuse | MRE = Materials for recycling | MER = Materials for energy recovery | EE = Exported energy |

APPENDIX: A

Table 33: Variation between 12mm Tilt EchoPanel® pattern and other 12mm printing patterns (average colour)

Impact Category	Selected Product: TILT	Variation From Selected Product:			
		FREQUENCY	HEX	TRAPEZE	TRIO
GWP	1.27E+01	0%	0%	0%	1%
ODP	1.14E-06	0%	0%	0%	0%
POCP	2.19E-03	0%	0%	0%	2%
AP	5.13E-02	0%	0%	0%	1%
EP	7.57E-03	0%	0%	0%	0%
ADPE	2.06E-05	0%	0%	0%	1%
ADPF	2.04E+02	0%	0%	0%	0%
PERE	5.31E+00	0%	0%	0%	1%
PERM	0	-	-	-	-
PERT	5.31E+00	0%	0%	0%	1%
PENRE	2.11E+02	0%	0%	0%	0%
PENRM	2.38E+01	0%	0%	0%	0%
PENRT	2.35E+02	0%	0%	0%	0%
SM	1.50E+00	0%	0%	0%	0%
RSF	0	-	-	-	-
NRSF	0	-	-	-	-
FW	1.27E-01	0%	0%	0%	1%
HWD	7.58E-04	0%	0%	0%	0%
NHWD	3.35E+00	0%	0%	0%	1%
RWD	5.84E-04	0%	0%	0%	0%
CRE	0	-	-	-	-
MRE	0	-	-	-	-
MER	0	-	-	-	-
EE	0	-	-	-	-

LEGEND

GWP = Global Warming Potential | ODP = Ozone Depletion Potential | POCP = Photochemical Oxidant Formation Potential |
 AP = Acidification Potential | EP = Eutrophication Potential | ADPE = Abiotic Resource Depletion Potential – Elements |
 ADPF = Abiotic Resource Depletion Potential – Fossil Fuel | PERE = Use of renewable primary energy excluding raw materials |
 PERM = Use of renewable primary energy resources used as raw materials | PERT = Total use of renewable primary energy resources |
 PENRE = Use of non-renewable primary energy excluding raw materials | PENRM = Use of non-renewable primary energy resources used
 as raw materials | PENRT = Total use of non-renewable primary energy resources | SM = Use of secondary material | RSF = Use of renewable second-
 ary fuels | NRSF = Use of non-renewable secondary fuels | FW = Use of net fresh water | HWD = Hazardous waste disposed |
 NHWD = Non-hazardous waste disposed | RWD = Radioactive waste disposed | CRE = Components for reuse | MRE = Materials for recycling | MER =
 Materials for energy recovery | EE = Exported energy |

